

WHAT IS CLAIMED IS:

1. An apparatus for recording and reproducing an information signal on and from an optical disc, comprising:
  - 5 a memory;  
means for writing the information signal into the memory;  
means for reading out the information signal from the memory;  
an optical head for generating a laser beam in response to the
  - 10 readout information signal, and applying the laser beam to the optical disc to record the readout information signal on the optical disc;  
means for recording a test signal on a position of the optical disc near a recording position thereof via the optical head during
  - 15 the writing of the information signal into the memory;  
means for reproducing the test signal from the optical disc;  
means for evaluating the reproduced test signal to generate an evaluation result; and  
means for optimizing an intensity of the laser beam in
  - 20 response to the evaluation result.
2. An apparatus for recording and reproducing an information signal on and from an optical disc, comprising:
  - a memory;
  - 25 means for writing the information signal into the memory;  
means for reading out the information signal from the

memory;

an optical head for generating a laser beam in response to the readout information signal, and applying the laser beam to the optical disc to record the readout information signal on the optical disc;

means for changing a power of the laser beam among a plurality of different levels;

means for measuring the laser beam to generate measurement result values during the change of the power of the laser beam among the plurality of the different levels; and  
means for optimizing an intensity of the laser beam in response to the measurement result values.

3. An apparatus as recited in claim 1, wherein the test signal comprises a test pattern signal, and the recording means comprises means for recording the test pattern signal on the optical disc via the optical head while changing an intensity of the laser beam among a plurality of different levels for a testing purpose, and wherein the reproducing means comprises means for reproducing the test pattern signal from the optical disc, and the evaluating means comprises means for evaluating at least one of asymmetry and jitter of the reproduced test pattern signal to generate the evaluation result.

4. An apparatus as recited in claim 2, further comprising means for repetitively measuring the laser beam to repetitively generate a

measurement result value, means for calculating a difference between a current measurement result value and an immediately preceding measurement result value, and means for enabling the optimizing means to optimize the intensity of the laser beam when  
5 the calculated difference is equal to or greater than a predetermined value.

5. An apparatus as recited in claim 1, further comprising means for repetitively measuring a temperature to repetitively generate a  
10 measured temperature value, means for calculating a difference between a current measured temperature value and an immediately preceding measured temperature value, and means for enabling the optimizing means to optimize the intensity of the laser beam when the calculated difference is equal to or greater than a  
15 predetermined value.

6. An apparatus as recited in claim 1, further comprising means for measuring a lapse of time since a moment of the last optimization of the intensity of the laser beam, and for deciding  
20 whether or not the measured lapse of time exceeds a predetermined time to generate a decision result, and means for optimizing the intensity of the laser beam in response to the decision result.

25 7. An apparatus as recited in claim 1, further comprising means for measuring a distance between a current recording position and a

next recording position on the optical disc, and deciding whether or not the measured distance exceeds a predetermined distance to generate a decision result, and means for optimizing the intensity of the laser beam in response to the decision result.

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8. A method of recording and reproducing an information signal on and from an optical disc, comprising the steps of:

writing an information signal into a memory;

reading out the information signal from the memory;

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generating a laser beam in response to the readout information signal, and applying the laser beam to the optical disc to record the readout information signal on the optical disc;

recording a test signal on a position of the optical disc near a recording position thereof via the optical head during the writing of the information signal into the memory;

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reproducing the test signal from the optical disc;

evaluating the reproduced test signal to generate an evaluation result; and

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optimizing an intensity of the laser beam in response to the evaluation result.

9. An optical disc having an area storing information of an intensity of a laser beam which has been optimized by the apparatus of claim 1.

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10. An apparatus for recording and reproducing an information

signal on and from an optical disc, comprising:

a memory;

means for writing the information signal into the memory;

means for reading out the information signal from the

5 memory;

an optical head for generating a laser beam in response to the readout information signal, and applying the laser beam to the optical disc to record the readout information signal on the optical disc;

10 means for recording a test signal on a position of the optical disc near a recording position thereof via the optical head during the writing of the information signal into the memory;

means for reproducing the test signal from the optical disc;

first optimizing means for measuring asymmetry of the

15 reproduced test signal, and optimizing an intensity of the laser beam in response to the measured asymmetry;

second optimizing means for measuring jitter of the reproduced test signal, and optimizing the intensity of the laser beam in response to the measured jitter;

20 third optimizing means for measuring the laser beam to generate a measurement result, and optimizing the intensity of the laser beam in response to the measurement result;

means for detecting a type of the optical disc; and

means for selecting at least one of the first, second, and third

25 optimizing means in response to the detected type, and enabling the selected one of the first, second, and third optimizing means.

11. An apparatus as recited in claim 10, wherein the type detecting means comprises means for deciding whether the type of the optical disc is an organic-dye type or a phase change type to  
5 generate a type decision result, and the selecting means comprises means for selecting at least one of the first, second, and third optimizing means in response to the type decision result, and enabling the selected one of the first, second, and third optimizing means.
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12. An apparatus as recited in claim 10, wherein the type detecting means comprises means for reproducing disc information from the optical disc, and means for deriving a disc maker from the reproduced disc information, and wherein the selecting means  
15 comprises means for selecting at least one of the first, second, and third optimizing means in response to the disc maker, and enabling the selected one of the first, second, and third optimizing means.
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13. An apparatus as recited in claim 10, wherein the type detecting means comprises means for reproducing disc information from the optical disc, and means for deriving a disc article number from the reproduced disc information, and wherein the selecting means comprises means for selecting at least one of the first, second, and third optimizing means in response to the disc article  
25 number, and enabling the selected one of the first, second, and third optimizing means.

14. An apparatus as recited in claim 10, wherein the type  
detecting means comprises means for reproducing disc information  
from the optical disc, and means for deriving a disc production lot  
5 number from the reproduced disc information, and wherein the  
selecting means comprises means for selecting at least one of the  
first, second, and third optimizing means in response to the disc  
production lot number, and enabling the selected one of the first,  
second, and third optimizing means.
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15. An apparatus for recording and reproducing an information  
signal on and from an optical disc, comprising:
- a memory;
  - means for writing the information signal into the memory;
  - 15 means for reading out the information signal from the  
memory;
  - an optical head for generating a laser beam in response to the  
readout information signal, and applying the laser beam to the  
optical disc to record the readout information signal on the optical  
20 disc;
  - means for repetitively recording a test signal on a place on the  
optical disc via the optical head, the place being near a recording  
position of the optical disc which is subjected to signal recording  
next;
  - 25 means for reproducing the test signal from the optical disc;
  - means for evaluating the reproduced test signal to generate an

evaluation result;

means for optimizing an intensity of the laser beam in response to the evaluation result; and

means for changing the test signal on a recording-by-  
5 recording basis.

16. An apparatus as recited in claim 15, wherein the changing means comprises means for generating a random signal providing a random timing, and means for shifting the test signal in response to  
10 the random timing to change the test signal on the recording-by-recording basis.

17. An apparatus as recited in claim 15, wherein the changing means comprises means for time-positionally exchanging signal  
15 segments of the test signal to change the test signal on the recording-by-recording basis.

18. An apparatus for recording and reproducing an information signal on and from an optical disc, comprising:  
20 means for generating a laser beam in response to a first time segment of the information signal, and applying the laser beam to a first place on the optical disc to record the first time segment of the information signal on the first place on the optical disc;  
means for generating a laser beam in response to a test signal,  
25 and applying the laser beam to a second place on the optical disc to record the test signal on the second place on the optical disc while



changing the laser beam among a plurality of conditions different from each other, the second place immediately following the first place;

means for reproducing the test signal from the optical disc;

5 means for evaluating the reproduced test signal to generate evaluation results corresponding to the respective different conditions of the laser beam;

means for deciding a best of the evaluation results; and

means for generating a laser beam in one of the different

10 conditions which corresponds to the best evaluation result and in response to a second time segment of the information signal, and applying the laser beam to the second place on the optical disc to write the second time segment of the information signal over the test signal on the second place on the optical disc, the second time  
15 segment immediately following the first time segment.

19. An apparatus as recited in claim 18, wherein the different conditions of the laser beam comprise different conditions of pulses in pulse trains of the laser beam.

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20. An apparatus for recording and reproducing an information signal on and from an optical disc, comprising:

a memory;

means for writing the information signal into the memory;

25 means for reading out the information signal from the memory;

an optical head for generating a laser beam in response to the readout information signal, and applying the laser beam to the optical disc to record the readout information signal on the optical disc;

5        means for recording a test signal on the optical disc via the optical head while changing the laser beam among a plurality of conditions different from each other for a testing purpose during the writing of the information signal into the memory;

         means for reproducing the test signal from the optical disc;

10       means for evaluating the reproduced test signal to generate evaluation results corresponding to the respective different conditions of the laser beam;

         means for deciding a best of the evaluation results; and

         means for controlling the laser beam into one of the different  
15       conditions which corresponds to the best evaluation result.

21.    An apparatus as recited in claim 20, wherein the different conditions of the laser beam comprise different conditions of pulses in pulse trains of the laser beam.